Kedron Brook Catchment Summary of Fish Snapshot Results 2002 - 2009

This report outlines the locations, methods, results, conclusions and recommendations for the Fish Snapshot program conducted in Kedron Brook catchment (Brisbane) by the Kedron Brook Catchment Branch - a community catchment group.

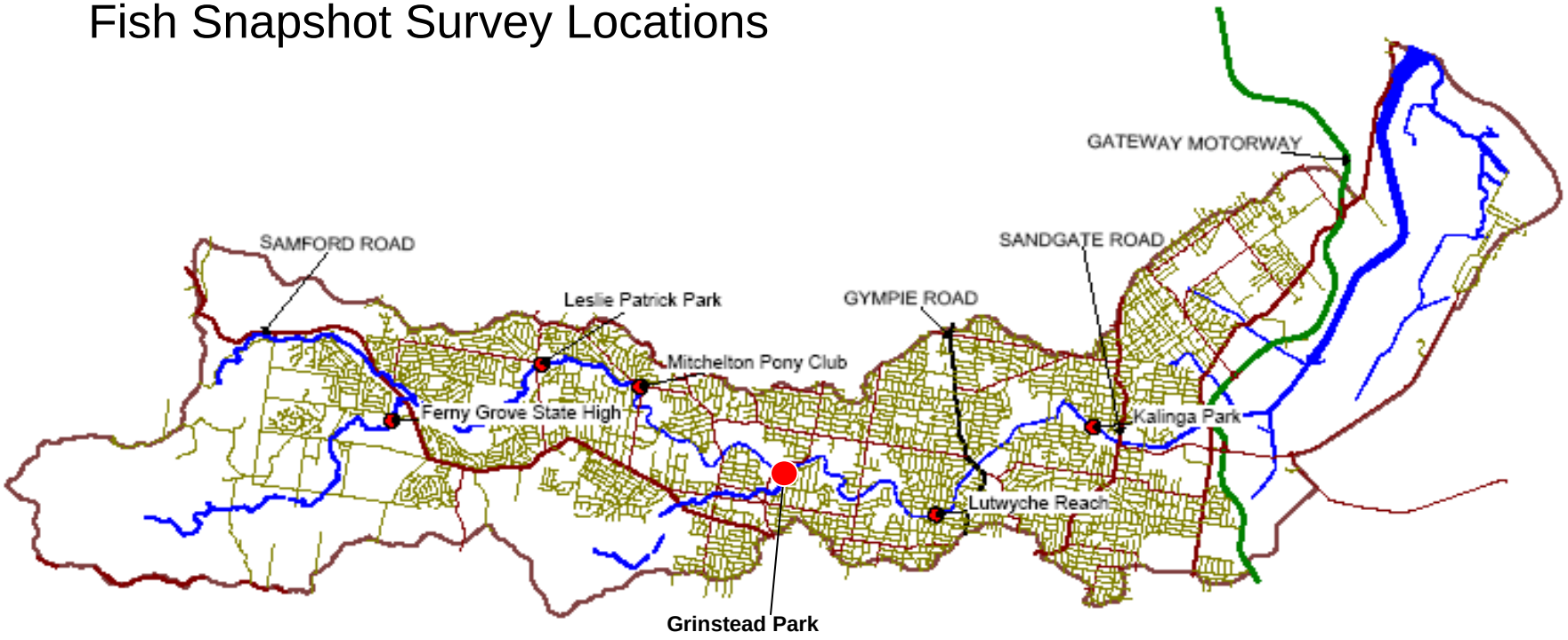
Wildlife Preservation Society of Qld
Kedron Brook Catchment

KEDRON BROOK CATCHMENT BRANCH

Native fish species are an important component to the functioning of natural aquatic ecosystems. Exotic species are a sign of a degraded system, further disrupting natural systems. They are capable of displacing some native populations possibly to the extent of extinction. Surrounding pressures from increased urbanisation, like pollution, vegetation disturbance and introduced species (flora & fauna) can also severely impact on the aquatic ecosystem, including the abundance and diversity of native species.

Kedron Brook Catchment

Fish Snapshot Survey Locations



Since 2002, Fish Snapshot surveys have been conducted at 6 different sites (Ferny Grove State High, Leslie Patrick Park, Mitchelton Pony Club, Grinstead Park, Lutwyche Reach and Kalinga Park) in the Kedron Brook catchment. Data about the fish that inhabit these sites along the waterways of Kedron Brook catchment has been collected during this time. This data provides an indication of the health of the Kedron Brook catchment and enables the Kedron Brook catchment group to direct its activities and advocate for appropriate management actions into the future.

Why do fish snapshots?

To date the FSS program has served many functions:

- To gather data on the health of the Brook to be used for a number or reasons –
  - Internally by KBCB to direct the activities of the group
  - Externally by researchers and BCC to inform various projects and plans
- To provide a focused activity for the Branch that is both fun & useful.
- To provide participants with a learning opportunity that enhances their knowledge of the flora and fauna of the Brook, and develops their connection with their local environment.
- Social function – a fun way to get to know people who live in the catchment.
- To raise awareness - both of the existence of the Branch and of concerns and issues in the catchment area.

The data that has been gathered from 2002 to 2009 is a crucial component in monitoring fish species and the habitat health and diversity of the Brook. It assists in directing future activities to help improve the health of the Brook and the surrounding catchment.

It is important that biodiversity is sustained and improved in our waterways, for example in-stream vegetation, water flow and microhabitat diversity. A key response is through conservation and rehabilitation. Thus the ongoing monitoring of native fish species and their relationship with their habitat is vital in order to establish what is working, and what is not, in order for us to sustain and improve the diversity our local natural ecosystems.

Fish Snapshot Procedure

The methods employed for Fish Snapshots activities in Kedron Brook catchment are based on the methods outlined in the document:

“Waterwatch Brisbane Fish Snapshot – Standard Procedures for conducting a community fish monitoring program”.

Available online

http://www.qld.waterwatch.org.au/resources/pdf/fish_snapshot.pdf

Outlined below is a summary of these standard procedures:

Dip Netting

1. Mark out a 40m transect parallel with the bank, and mark out 0, 10, 20, 30 and 40m points along the banks

   (note: work in an upstream direction)
2. At each 10m mark (starting at 0m, ie. downstream) conduct a 3m sweep upstream. Each 3m sweep must have 3 dip nets (1 adjacent to each bank, and one in the midstream).
3. After each 3m sweep, collect, identify and record all species caught.

Bait Traps

1. Set Bait Traps for 20 minutes in each habitat type– 4 habitat types
   - Slow flow & shade over water x 2
   - Slow flow and no shade over water x 2
   - Fast flow & shade over water x 2
   - Fast flow & no shade over water x 2
1. After 20minutes, empty bait traps into labelled buckets, identify & record all species caught.
2. Repeat for each habitat type.

Waterwatch

- Complete Waterwatch Field Record Sheet (water quality and environmental conditions).

Stream Habitat

- Complete Habitat Survey Field Guide Ratings Sheet.
- Identify in-stream vegetation

Site Map & Cross Section

- Complete a stream morphology map

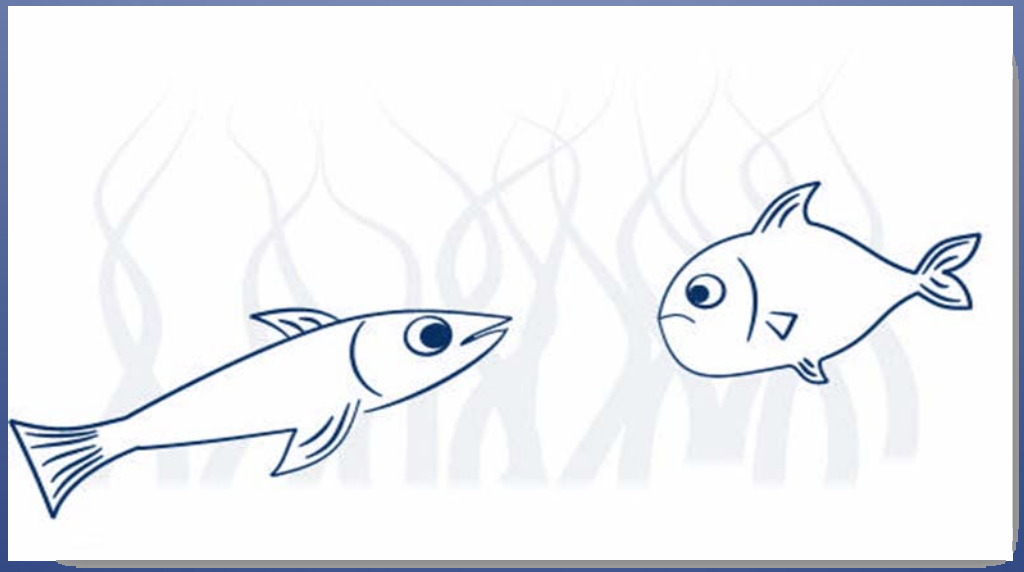
Methods of data collection

Setting a bait trap

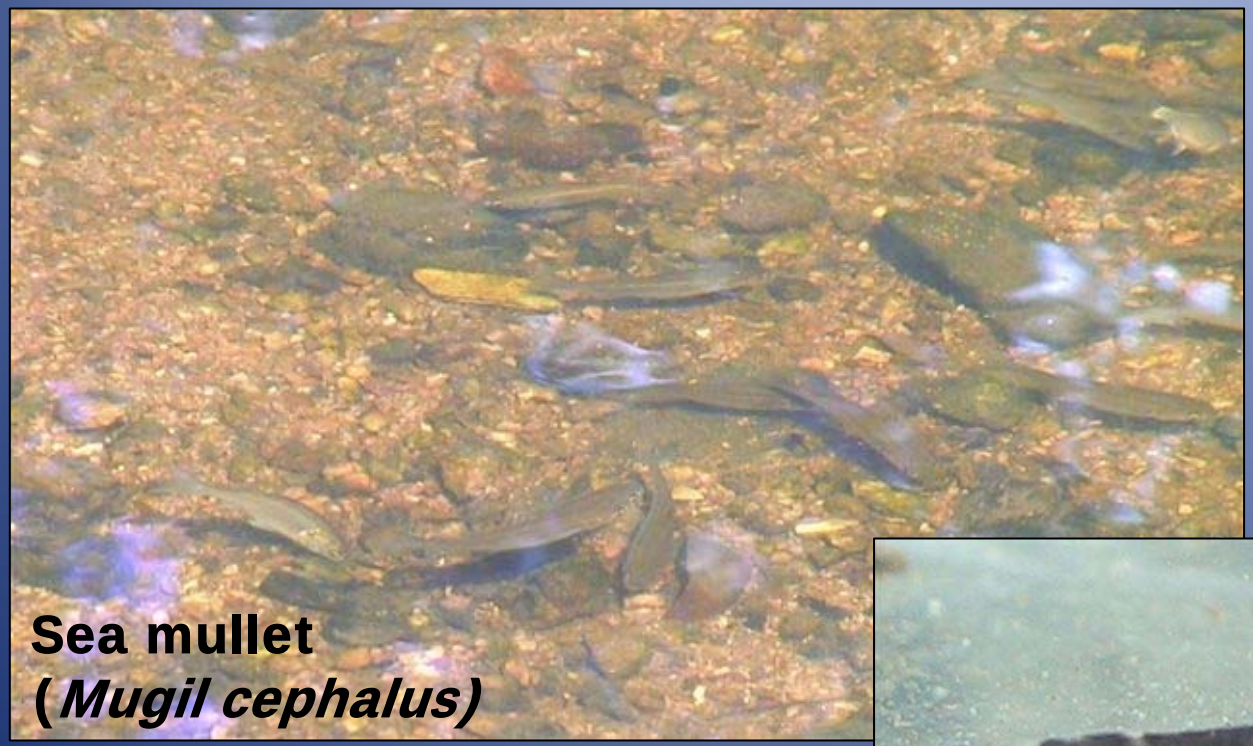
Using the Horiba probe for Waterwatch data

Marking out the 40m long transect

Examples of fish specimens caught or observed during Fish Snapshots Surveys



Fish specimens at Kalinga Park, 2009



Sea mullet
(*Mugil cephalus)*

Flathead gudgeon
(*Philypnodon grandiceps)*

Fish specimens at Kalinga Park, 2009

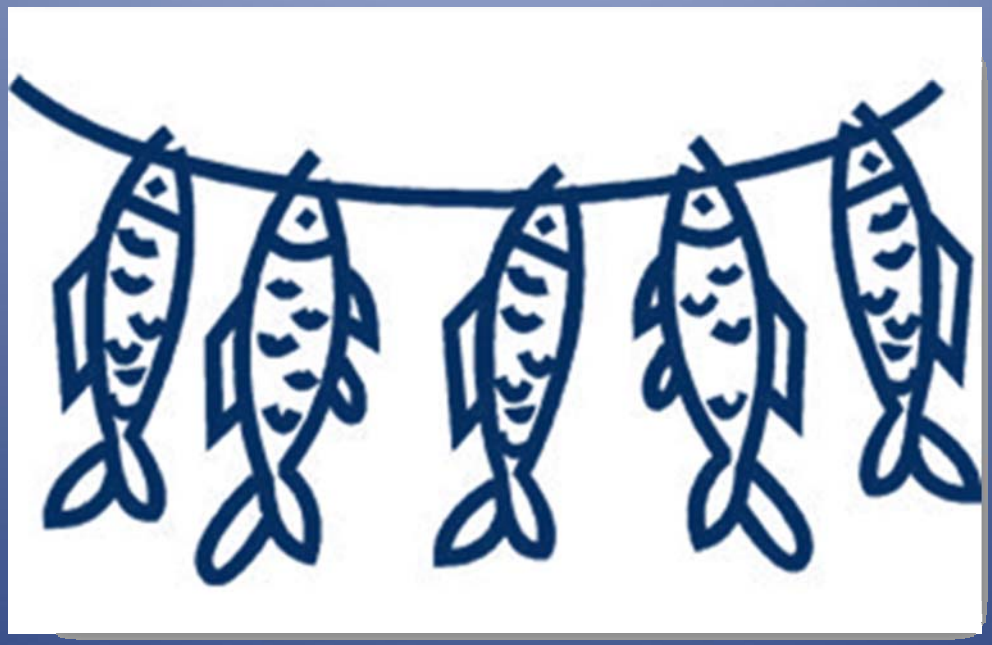
Estuary Glassfish
(Ambassis marianus)

Yellow fin bream
(Acanthopagrus australis)

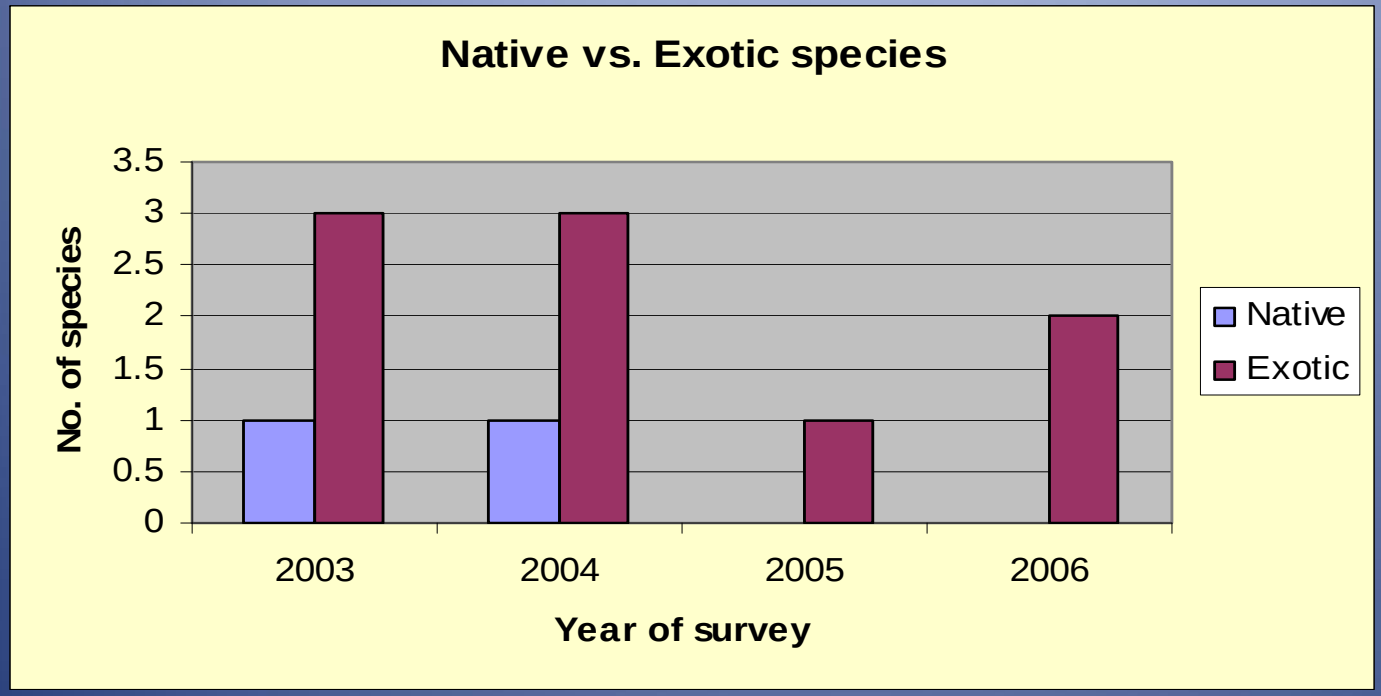
Fish specimen at Leslie Patrick Park, 2009

Firetail Gudgeon
(Hypseleotris galii)

Fish Snapshot Results



Ferny Grove State High



Native Species

- Firetail / Western car

Exotic Species

- Mosquitofish
- Platy
- Swordtail

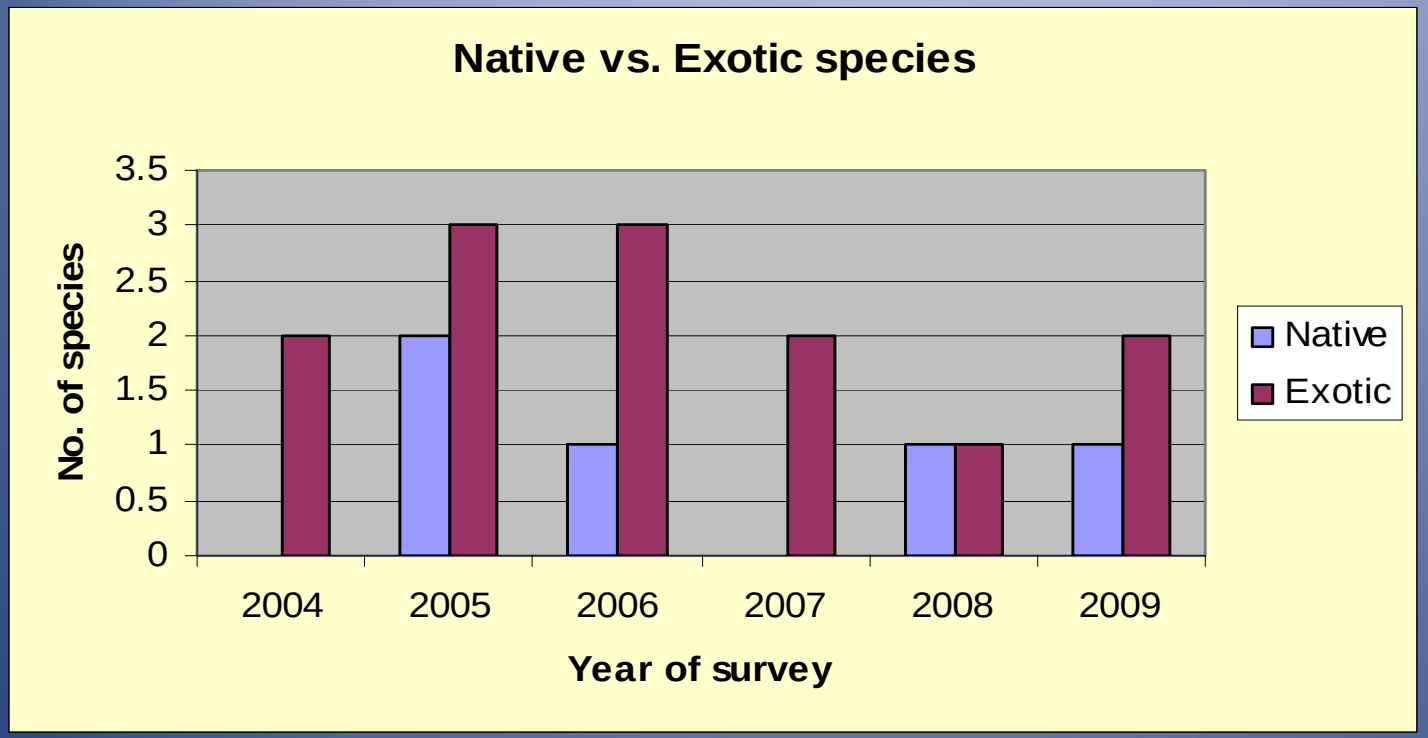
Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Ferny Grove State High	2003	6	7	8	3	5	29

Ferny Grove State High

Statement of results & discussion points

- Exotic fish species dominated this site during its inclusion in the program.
- Based on the one year of recorded stream habitat rating the site appears to have good quality riparian habitats. Bank vegetation and bank stability/erosion appeared to be the greatest issues in terms of habitat health at this site.
- Without further data/information on the stream habitat (i.e. subsequent years from 2003) it is impossible to suggest what may have influenced the presence/absence of exotic and native fish species. With the high school so close by it would be beneficial to re-introduce the program at this site with their involvement and the local community.

Leslie Patrick Park / Arana Hills



Native Species

- Eel-tailed catfish
- Firetail / Western car
- Gudgeon

Exotic Species

- Mosquitofish
- Swordtail
- Platy

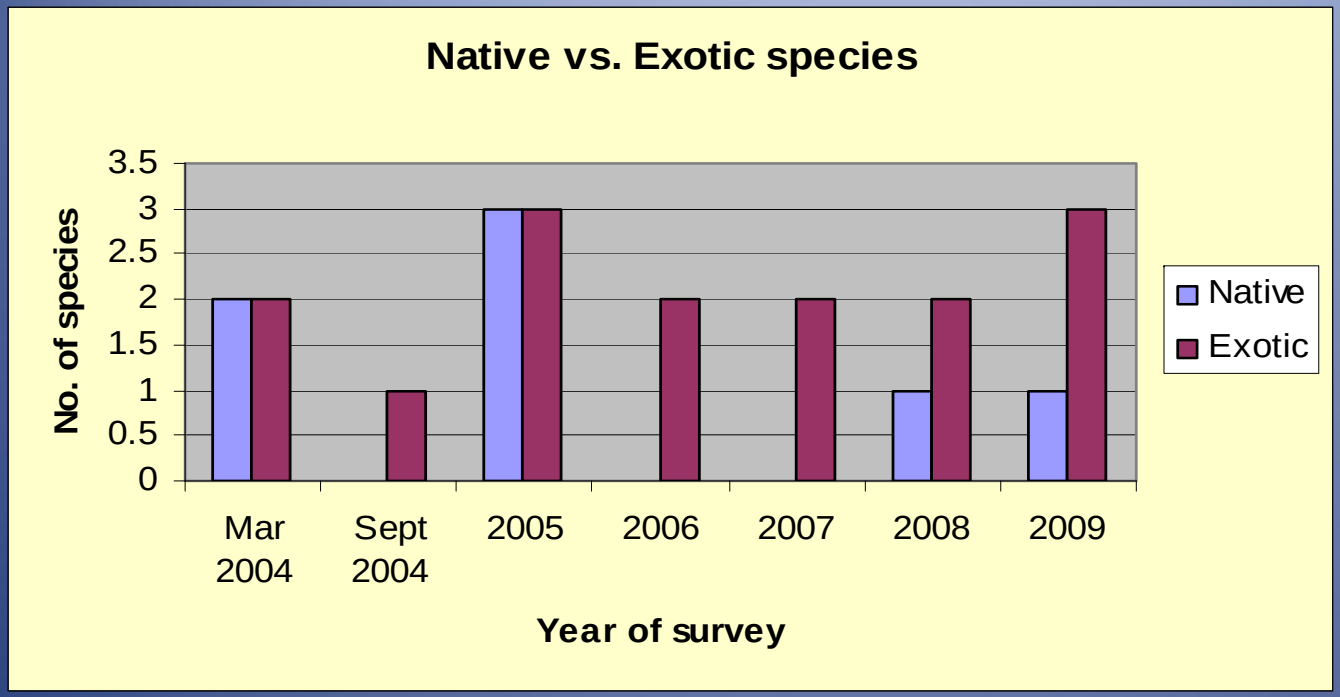
Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Leslie Patrick Park / Arana Hills	2003	4	7	7	4	4	26
	2004	5	8	3	3	1	20
	2006	6	4	6	3	3	24
	2007	6	4	6	3	3	24

Leslie Patrick Park / Arana Hills

Statement of results & discussion points

- Exotic fish species have dominated this site over the years.
- Despite an improvement in bank vegetation, all other riparian veg. zones showed a decline in health from 2003-2007, which has resulted in the stream habitat rating declining over this period.
- From the information available there is no trend apparent between the presence/absence of exotic and native fish species, and that of stream habitat health over time.

Mitchelton Pony Club



Native Species

- Australian smelt
- Eel-tailed catfish
- Agassiz's Glassfish
- Fly-specked hardyhead

Exotic Species

- Mosquitofish
- Platy
- Swordtail

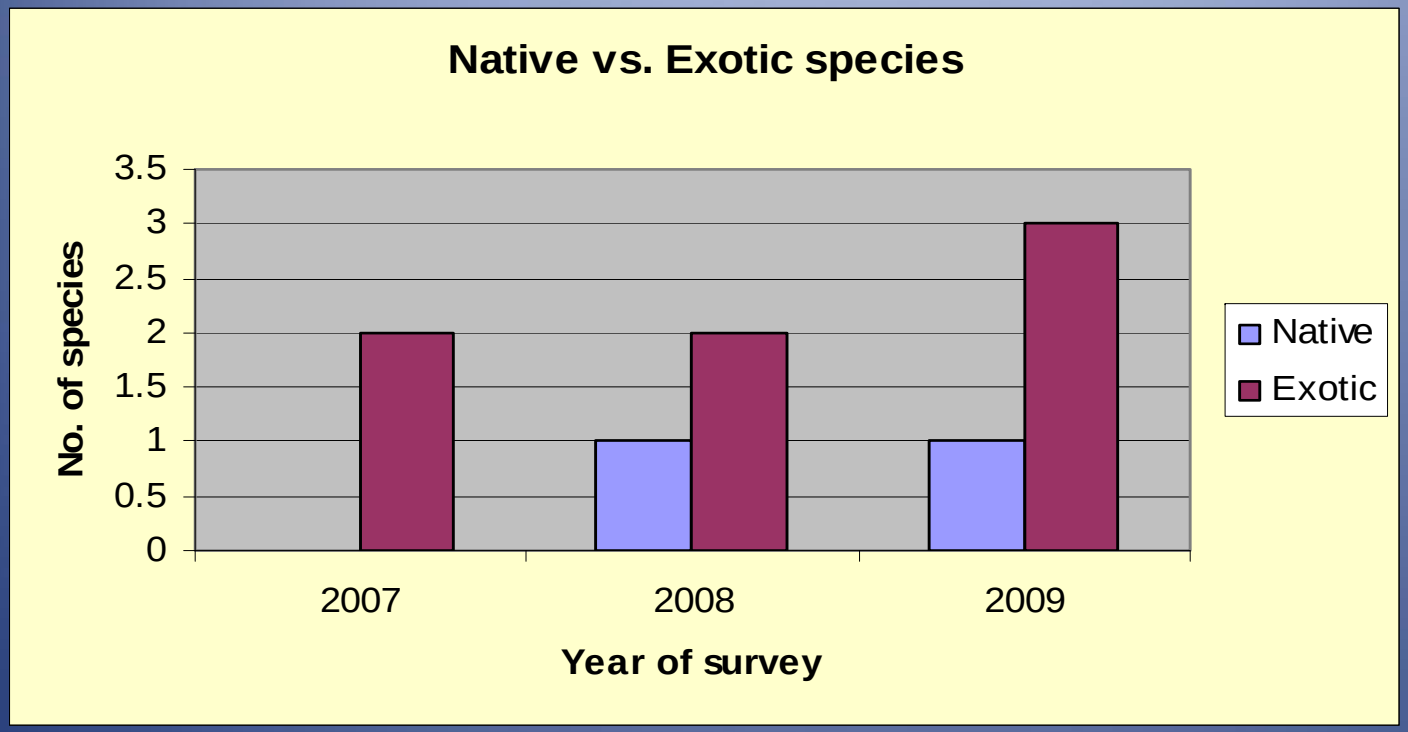
Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Mitchelton Pony Club	2004	4	4	6	3	4	20
	2006	4	4	6	4	3	21
	2007	5	2	6	4	4	21

Mitchelton Pony Club

Statement of results & discussion points

- The results indicate that the presence of native fish species at the site has been intermittent over the years.
- Stream habitat health appears to have remained stable over this time, scoring a fair rating overall.
- The inclusion of results for spring and autumn 2004, which are quite different, suggests that another factor/s is the crucial point affecting species presence/absence, rather than stream habitat health.

Grinstead Park



Native Species

- Eel-Tailed Catfish
- Fly-specked hardyhead

Exotic Species

- Mosquitofish
- Platy
- Swordtail

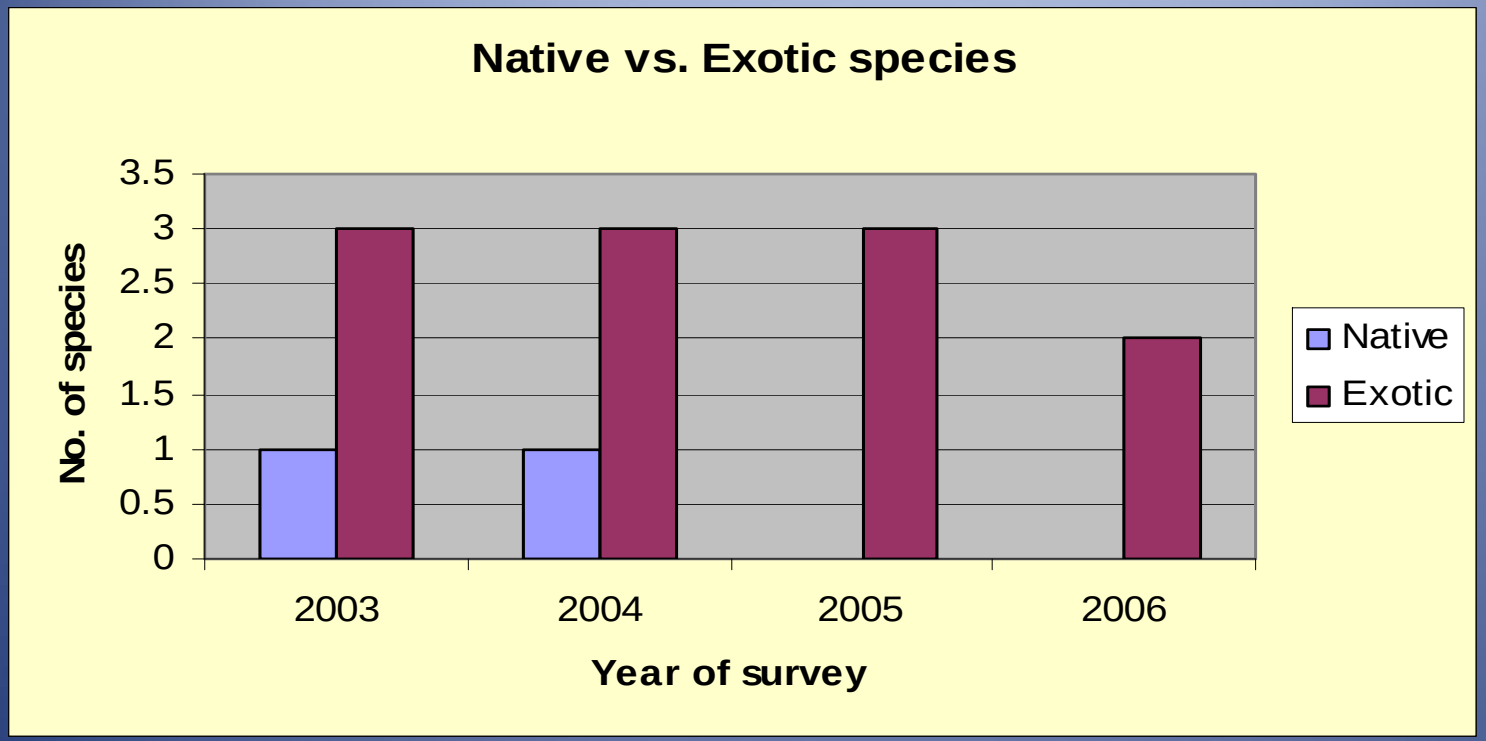
Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Grinstead Park	2003	7	8	6	4	4	29
	2007	4	6	6	4	4	24

Grinstead Park

Statement of results & discussion points

- Exotic fish species appear to be more prevalent at this site.
- The stream habitat health rating has shown a decline between 2003 and 2007 from good stream habitat to fair.
- The gap in records for this site makes it difficult draw out any conclusions.

Lutwyche Reach



Native Species

- Silver Perch
- Striped gudgeon

Exotic Species

- Mosquitofish
- Swordtail
- Platy

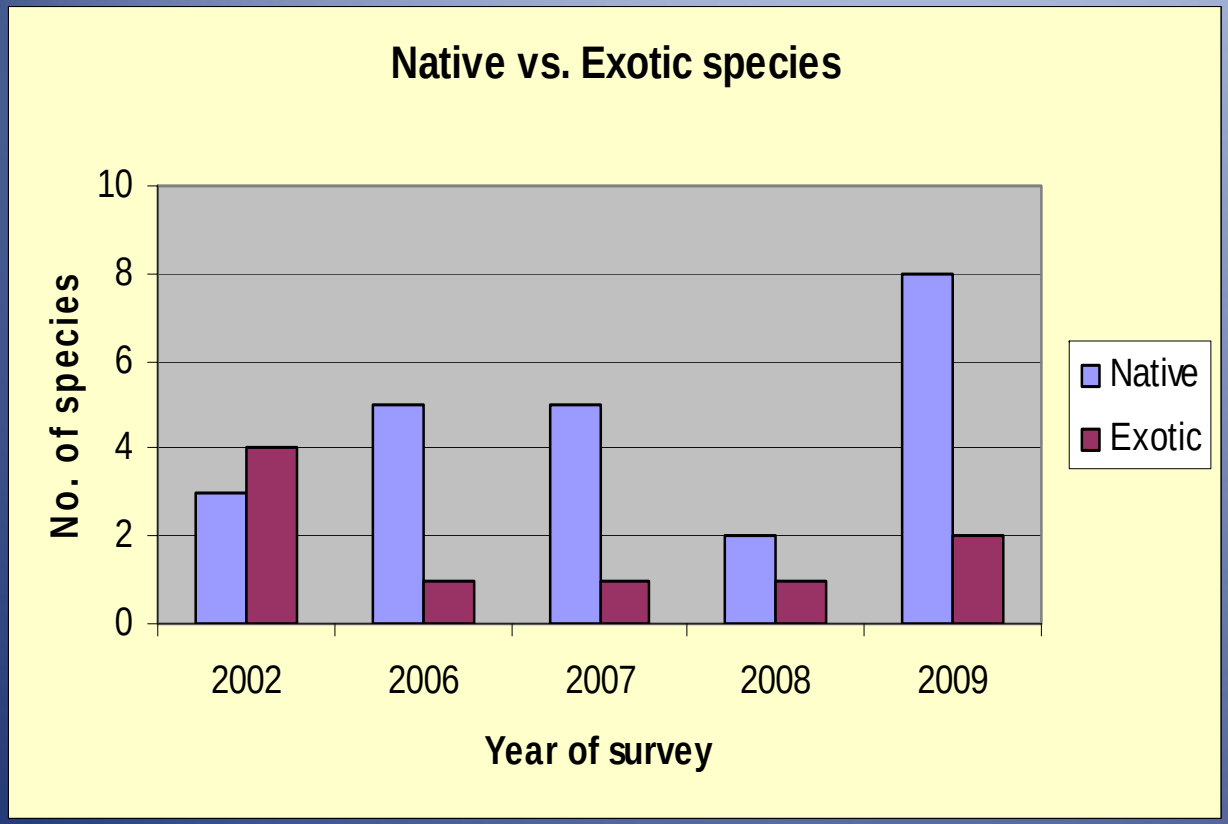
Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Lutwyche Reach	2003	4	4	6	4	3	21
	2004	4	2	4	4	3	17
	2005	4	2	4	3	2	15
	2006	2	2	4	3	2	13

Lutwyche Reach

Statement of results & discussion points

- While exotic species are more prevalent at this site than natives, the number of species caught at this site declined over the sampling period.
- Likewise the stream habitat health rating has declined over the period, from fair to poor.
- The decline in both number of fish species and stream habitat health may indicate a relationship between the two.

Kalinga Park



Native Species

- Sea mullet
- Pacific blue-eye
- Striped gudgeon
- Bullrout
- Gudgeon sp 1
- Gudgeon sp 2
- Gudgeon sp 3
- Empire gudgeon
- Spotted Toadfish
- Flathead Gudgeon (prob)
- Agassiz's Glassfish
- Speckled goby
- Gudgeon
- Estuary perchlet
- Smalleye Gudgeon
- Crimsontip Gudgeon (prob)
- Yellowfin Bream

Exotic Species

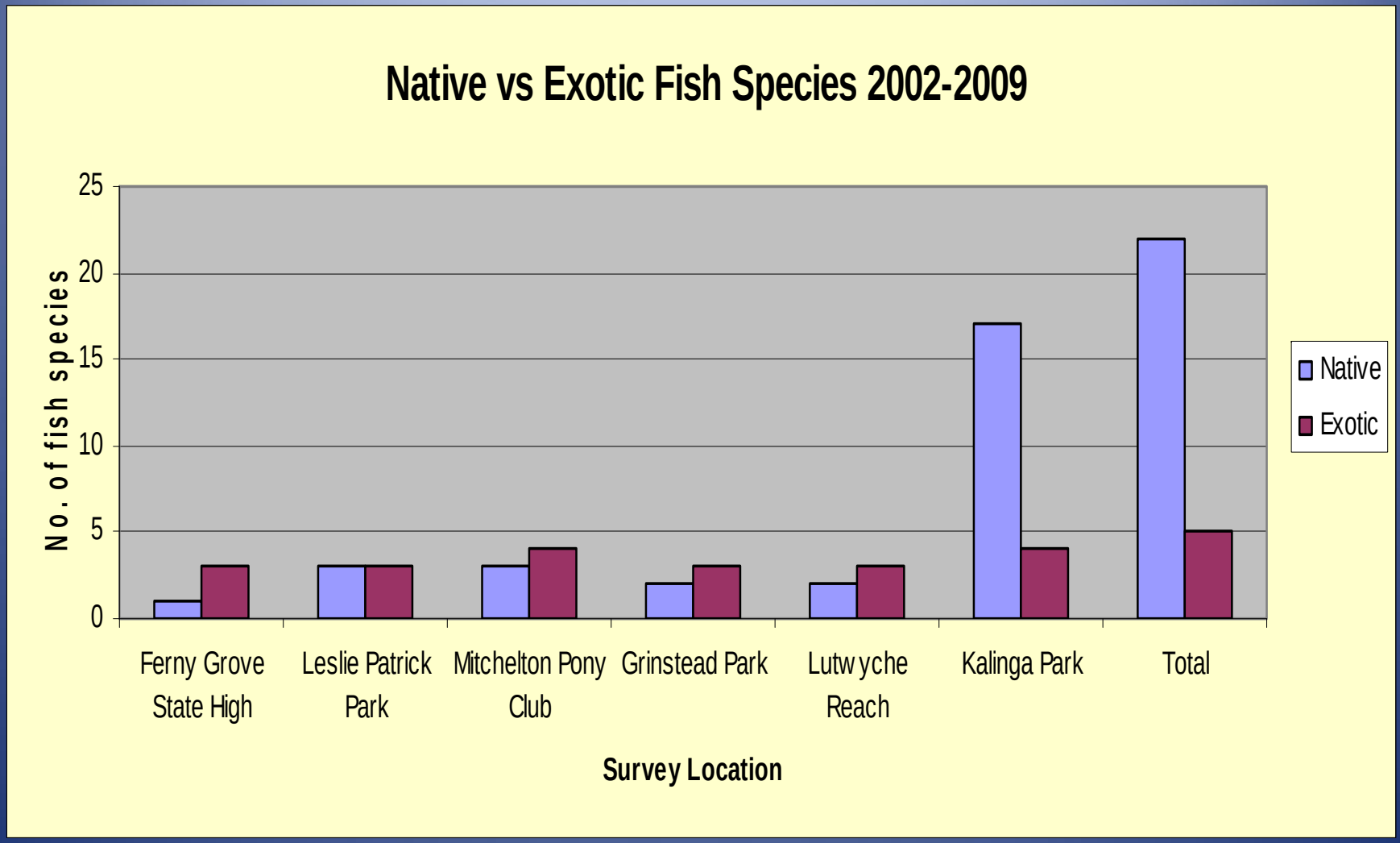
- Goldfish
- Guppy
- Mosquitofish
- Platy

Location	Year of Survey	Bank Vegetation / 10	Verge Vegetation / 10	In-stream Cover / 10	Bank erosion and stability / 5	Riffles, pools and bends / 5	Total Stream Habitat Rating / 40
Kalinga Park	2006	5	2	4	4	3	18
	2007	5	2	4	4	3	18

Kalinga Park

Statement of results & discussion points

- These results show an increase in native fish species over the years and a decline in exotic species. This site appears to be the most diverse of all the sites.
- The data available for stream habitat health suggests that the vegetation and habitat is of average quality.



In terms of diversity, native fish species far outweigh that of exotic fish species, which is a positive sign for the waterways of Kedron Brook catchment. However, as the graph above illustrates the most diverse region of the catchment appears to be the lower catchment which has an estuarine influence.

Update 2010

In 2010 the expiration of Brisbane City Council's animal ethics permit left KBCB, along with many groups across the city, unable to undertake its annual fish snapshot activity. To provide some kind of continuity KBCB continued with a stream snapshot activity that excluded sampling of fish, but did collect physical/chemical water quality data and record stream profiles. These results are included in the following slide (water quality results have not be included for previous years as data was incomplete)…

Water Quality & Vegetation Results 2010

	Water Quality Physical / Chemistry						
Location	pH	Temperature	Turbidity	Salinity (%)	Conductivity	Dissolved oxygen	Observations
Leslie Patrick Park / Arana Hills	7.04	23.89	3.5	0.02	0.4905	10.7	Sunny day, last rainfall during the last 24hrs, moderate flow, water had a stained brown appearance. 30%-40% shaded water.
Mitchelton Pony Club	7.39	24.695	4	0.025	0.4915	13.57	Sunny day, last rainfall during the last 24hrs, moderate flow, water had a stained brown appearance. 80% shaded water.
Grinstead Park	7.03	25.375	9.15	0.02	0.509	11.385	Overcast day, last rainfall during the last 24hrs, moderate flow, water was clear. 75% water shaded. Mullet observed at site.
Kalinga Park	7.48	25.617	10.7	0.03	0.578	14.117	Overcast day, last rainfall during the last 24hrs, slow flow, water was muddy. 33% water shaded.

Overall Conclusions

- Stream habitat has generally declined over the years.
- While not recorded in this summary, records indicate that a greater number of exotic fish have been caught over the years. However, in terms of diversity the results for native fish species indicate that they have a wider diversity than exotics. Providing a reason to hope that through further improvements in habitat and water quality native species can once again flourish.
- The water quality results from 2010 show that the Brook's water is of reasonable good quality (based on Module 4 – Physical and Chemical Parameters; Waterwatch Australia National Technical Manual).

Comments on data quality

Data quality is important in terms of its usefulness. Often governments, research bodies and other organisations are wary of using data collected by the community as quality control can be difficult to ensure.

KBCB's data quality has been affected by the fact that there can be and generally are inconsistencies between the collectors from year to year. This issue is not helped when data records are lost.

Recommendations

- To reduce inconsistencies, annual “training” should be conducted with team leaders and their groups on data collection & recording. Particularly in relation to subjective measurements such as habitat/vegetation quality.
- All data sheets should be collected by one person and entered into a set database, whether it is an excel type spreadsheet or an alternative. Hard copy originals should be scanned and then kept for a minimum 3 years.
- Include GPS photo point referencing as a key part of monitoring in order to develop a picture of change over the years.
- Backup all records on a variety of electronic media.
- It is also suggested that a survey for macro-invertebrates be undertaken to give an indication on the quality of the Brook’s water as some macro-invertebrates are sensitive to pollution and changes in water quality.

Looking toward the future of FSS –

What questions should direct our sampling?
What research could be undertaken?

- What does the presence/absence of native and exotic fish species indicate?
- What factors influence presence/absence for native and exotic fish species? *Vegetation structure? Weather conditions? Physical & Chemical parameters? Pollutants? etc...*
- Does the presence of exotic fish directly impact the absence of native species? Which ones?
- What can be done to reduce the impact of exotic fish on native species?
- What factors can WE influence and improve?

2011

Brisbane City Council rectified the loss of its animal ethics permit late in 2010. As such, KBCB will be reinvigorating its fish snap shot program.

Thank you!!!

KBCB would like to thank all its branch and network members who have volunteered their time over the years to undertake the annual Fish Snapshot.

Your time and effort in monitoring the Brook and contributing to its improvement and protection through other activities, such as bushcare is much appreciated!

It is hoped you and others will join KBCB in 2011 for a revamped program that will take on board some of the lessons learnt over the years recorded in this report.